National Aeronautics and Space Administration

LAGNIAPPE

John C. Stennis Space Center

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B-2 work hits another milestone

A blanket of water flows through the B-2 Test Stand aspirator at Stennis Space Center on May 4 during a system check in preparation for testing the core stage of NASA's new Space Launch System (SLS). B-2 Test Director Ryan Roberts said the test marked another preparation milestone for NASA, which is building SLS to carry humans deeper into space than ever. The aspirator system is designed to provide vibro-acoustic suppression during core stage testing, essentially creating a curtain of water around the firing engines to dampen the loudness of the test and protect the core stage from noise damage. Stennis is scheduled to test the SLS core stage that will be used on the rocket's first uncrewed flight, Expedition Mission-1.

Stennis names new associate director

Human to retire May 31; Bailey named as successor

See page 3

"The world's favorite season is the spring," writer Edwin Way Teale once noted. "All things seem possible in May." In the case of Stennis Space Center, though, it seems all possibilities become reality in May.

It is small wonder. After all, construction of Stennis even began in that month, with workers felling the first tree for construction of the site on May 17, 1963. TIMBERRR! (See page 13)

May 1988 was a particularly significant month. On May 9 of that year, NASA designated Stennis as its lead center for commercial remote sensing. The designation recognized the hard – and world-recognized – work Stennis had done in applying space-based information and data to real-world environmental issues.

Also, early in 1988, U.S. Sen. John C. Stennis of Mississippi announced plans to retire. President Ronald Reagan wasted little time, signing an executive order on May 20 to rename the then-National Space Technology Laboratories for the man who had demonstrated "visionary leadership" and "unwavering support" of NASA and its test site from the very beginning. A ceremony marking the renaming was held on site on Aug. 3, 1988, with more than 7,000 people attending.

In May 1994, program management for space shuttle main engine test operations were transferred from Marshall Space Flight Center to Stennis. For the first time, the center was in charge of its own rocket engine testing. Little brother had sure "growed up." Ark!

Two years later, in May 1996, Stennis was designated by NASA as the lead center responsible for conducting and/or managing all NASA propulsion test projects. The long fight for recognition and status was over – Stennis had proven its excellence!

Most recently, in May 2011, Stennis paid tribute by naming its main administration facility for late Director Roy S. Estess. It was fitting tribute to one who spent most of his 37-year NASA career at Stennis and helped the site achieve so many of its goals.

Of course, new goals remain – and May rolls around every year. You better pay close attention when it does – no telling what might happen around here. Ark!

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Stennis announces senior leadership changes

NASA has announced a pair of leadership changes at Stennis Space Center with the retirement of Associate Director Ken Human and the appointment of his successor. The changes are effective May 31.

Stennis Engineering and Test Directorate Director John Bailey, a native of Mobile, Alabama and resident of Picayune, Mississippi, will succeed Human in the front office post. Bailey joined the NASA team at Stennis in 1999 after serving as a civilian communications engineer for the U.S. Air Force. Since 2015, he has managed the largest Stennis directorate, which includes rocket propulsion testing and advanced space technology development.

Human, a resident of Covington, Louisiana, has served almost 40 years with NASA and was named Stennis associate director in 2010. He joined the Stennis team in 1978 as an attorney and later served as the center's chief counsel for two decades. In 2007, he left Stennis to assume duties as deputy manager of the External Integration Office at Johnson Space Center in Houston, supporting the International Space Station Program.

Stennis Director Rick Gilbrech praised Human for his "outstanding executive leadership and guidance" in announcing the change. "He is well known and respected throughout NASA, and he will leave indelible marks on all that he has inspired," Gilbrech said.

Bailey has served in multiple positions since joining the NASA team, including as strategic business manager, deputy manager of external affairs, science and technology chief, technology development and transfer chief and intellectual property/dual use technology manager.

"Without a doubt, John will serve this (new) role well," Gilbrech said. "His strong, diverse background spans a broad range of experiences across multiple organizations, which has given him a thorough understanding of the agency's mission and strategic goals and how they relate to the work being done here at Stennis," Gilbrech said.

Bailey will be succeeded as director of the Engineering and Test Directorate by Joe Schuyler, who has served as the department deputy since 2016.

John Bailey

Ken Human

Rocket Test Group meets at Stennis

Members of the national Rocket Test Group stand at the B-1/B-2 Test Stand during their 50th anniversary meeting at Stennis Space Center on April 24. The group is open to government, industry or university organizations involved in business testing. It includes representatives from several NASA centers, as well as companies such as SpaceX and Aerojet Rocketdyne. The group meets regularly to share information and work together on enhancing rocket ground test operational efforts, reducing ground test costs and enabling activation of new facilities.

FULFILLING NASA'S EXPLORATION MISSION

NASA getting set for Space Launch System core stage testing at Stennis

A milestone test of the vibro-acoustic system on the B-2 Test Stand at Stennis Space Center on May 4 provided some memorable images, including photos of the whirlpool-like effect from the flow of 87,000 gallons of water per minute through the system and the appearance of a double rainbow as the water exited the stand through the flame deflector. Stennis conducted a test of the flame deflector deluge system last December as its continues preparations for stage testing on NASA's new Space Launch System. NASA plans to test the core stage for the rocket's first flight – Expedition Mission-1 – on the stand. Preparation for the testing has required extensive modifications to the B-2 stand, affecting all areas and systems, Project Manager Barry Robinson said.

FULFILLING NASA'S EXPLORATION MISSION

Stennis develops, tests 1st-of-its-kind thrust vector control system for rocket engine testing

Stennis Space Center long has been a leader in rocket engine testing. Now, it has developed and tested a first-of-its-kind thrust vector control (TVC) system that adds a versatile, cost-efficient capability to its testing arsenal.

Stennis engineers recently completed testing the new TVC (gimbaling) system, using an RS-25 engine mass simulator on the A-1 Test Stand. Engineers are analyzing the data, but it appears the tests went well.

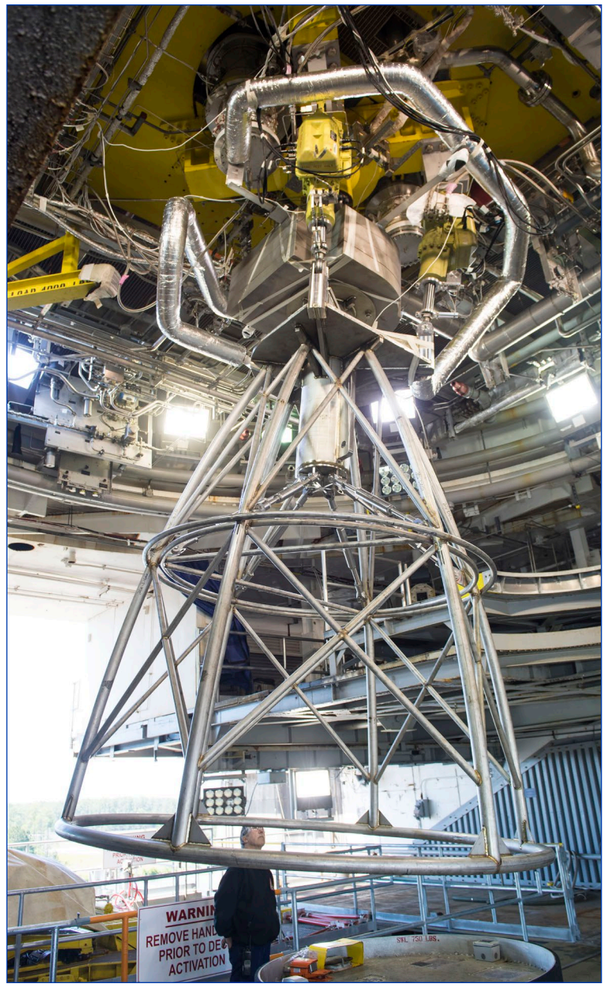
"This was another key step in development of a new testing capability," NASA engineer and TVC Project Manager Tommy Carroll said. "We built this with a mindset that we're going to use it on other engines in the future. It's an exciting additional service that we, as a space center, can provide customers."

TVC systems are used to gimbal – or tilt – rocket engines in any direction to control a rocket's flight path. Unlike an automobile, a rocket in flight has no steering wheel to guide it. Instead, its engines are rotated and tilted to direct engine thrust and guide the rocket into proper position. An engine is gimbal tested before use on actual flights to ensure its TVC system is designed properly and that all engine duct work and connections respond appropriately when the engine is rotated.

Each rocket engine has a unique TVC system for gimbaling, usually provided by the engine developer. Typically, engineers modify an engine's TVC flight system – the one used during an actual launch – to conduct ground gimbal testing.

TVC flight systems are more sophisticated than those needed for ground testing. Flight units have built-in backups – or redundancies – to ensure they will operate as needed during a rocket launch. Fewer redundancies are needed for ground testing.

Modifying TVC flight systems require time and expense, which led Stennis engineers to consider the possibility of a new approach. They set out to develop a TVC system specifically for ground testing.



Project manager Carroll led a team of individuals active in the test program – some with experience regarding TVC flight systems – to work on the project. Team members focused on assembling a simple system that could be adapted to various rocket engines. The result was the first TVC system intentionally designed for gimbal ground testing.

"We incorporated expertise from other test projects and systems to help reverse-design exactly what we needed," Carroll said. "The result was a less-expensive, more-adaptable product."

Stennis engineers developed the controller and worked with Moog, Inc., to provide the interface needed. Moog also refurbished actuators previously used for testing the space shuttle main propulsion test article at Stennis in the 1970s to be used on the new TVC system.

With new system in hand, Stennis worked with site contractor Syncom Space Services at Michoud Assembly Facility in New Orleans to build a mass simulator for testing. The simulator, which has the same shape, size and mass of an RS-25 engine, was delivered to Stennis in February.

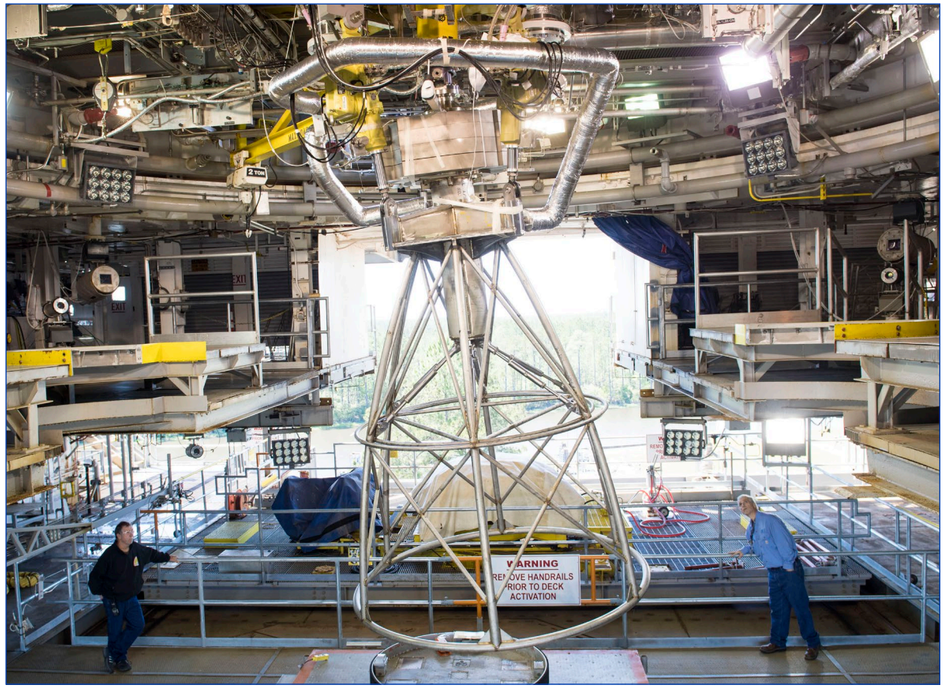
NASA had scheduled a break in RS-25 testing following the Feb. 21 hot fire on the A-1 Test Stand in order to complete some needed test stand work. Carroll and his team took advantage of the pause in activity to install the TVC unit and simulator on the stand and test its capabilities.

"We had completed some stage testing, so full testing was the next step," Carroll said. "We decided to take advantage of the lull in stand activity to save some schedule time later (and be ready when NASA wants to conduct gimbal testing on the RS-25 engine)."

NASA plans to gimbal test RS-25 engines on the A-1 Test Stand at Stennis next year. "What we'll look at specifically is how RS-25 modifications gimbal, particularly how the new ducts respond," Carroll said. "We will be checking to make sure they will perform properly when the vehicle is steered."

The RS-25 test series will mark only the beginning of the story for the new TVC system, however. Looking ahead, its actuators can be swapped out and its interface modified to work with various other engines, meaning private aerospace companies no longer will have to provide their own gimbal test units.

"This is a tool we can offer to save customers money," Carroll said. "It's something unique we believe will help attract companies to team with Stennis for rocket engine test projects."



Engineers and operators at Stennis Space Center conduct tests of a first-of-its-kind thrust vector control (TVC) system on the A-1 Test Stand at Stennis Space Center during the first half of May. Testing involved installing a mass "simulator – the same shape and weight as a rocket engine – on the stand and using the prototype system to gimbal (or rotate) it, as needed during actual flights to control a rocket trajectory. The new TVC test system is designed to add a versatile, cost-efficient capability future test projects at Stennis.

Bridenstine sworn in as new NASA administrator

(Top photo) Vice President Mike Pence (l) swears in Jim Bridenstine as the 13th NASA administrator as Bridenstine's family watches April 23 at NASA Headquarters. In his new role, Bridenstine takes over an agency critical to the nation's economy, security and technological preeminence.

(Bottom photo) Employees at Stennis Space Center watch the live telecast of the swearing-in ceremony for the new NASA administrator on site April 23. To learn more about the new NASA leader, access his biography at: https://www.nasa.gov/about/highlights/bridenstine-biography.html.

50 Years ago – decision to fly crew on 3rd Saturn V test flight accelerates moon landing

On April 27, 1968, NASA Administrator James E. Webb approved the plan to fly the third Saturn V mission with a crew. Webb based his decision on the work of engineers who quickly understood and fixed the problems encountered during the Apollo 6 mission earlier in the month. According to the Apollo program plan NASA released in November 1967 (https://www.nasa.gov/feature/50-years-ago-six-apollo-flights), three uncrewed test flights of the Saturn V would qualify the Moon rocket for its first Earth orbital crewed flight, planned for late 1968. Webb's decision brought the Moon landing closer.

In April, the second Saturn V test encountered significant problems during the launch of Apollo 6. During the last ten seconds of first stage burn, the rocket experienced longitudinal oscillations called "pogo effect." Pogo occurred when a partial vacuum in the fuel and oxidizer feed lines reached the engine firing chamber causing the engine to skip. These oscillations then travelled up the axis of the launch vehicle resulting in intense vibration in the Command and Service Module (CSM) and causing some structural damage. Problems continued when, following separation of the second stage, two of the five J-2 engines shut down prematurely. The guidance system directed the remaining engines and the third stage to burn longer to propel the spacecraft into orbit. And when it was time for the third stage to reignite, it failed to do so, forcing Mission Control to choose an alternate mission plan to achieve some of the mission objectives.

The pogo problem was nothing new to the world of rocketry as early launch vehicles such as the Thor, and even the Titan II used for the Gemini program, had a similar experience, as did, to a lesser degree, the Apollo 4 mission. Arguing that any crew would have survived the flight aboard Apollo 6, Marshall Space Flight Center Director Wernher von Braun conceded that the "flight clearly left a lot to be desired. With three engines out, we just cannot go to the Moon." Once the decision was made to place a crew on Apollo 8, solving the pogo issue took on critical importance. A recurrence of pogo on Apollo 8 could lead to the mission being aborted.

NASA formed a Pogo Working Group comprised of more than a 1,000 government and industry engineers to come up with a solution capable of verification through ground testing. The Working Group organized a rigorous investigation, which determined the key to mitigating the pogo effect included 'detuning' the F-1 engine to change the frequency of the vibration it produced and filling the charged prevalve cavities on the liquid oxygen (LOX) feed lines with helium gas from the tank pressurization system. Injecting helium into those lines prior to ignition would effectively work as a shock absorber by holding engine pulses into LOX lines and the vehicle structure preventing the oscillations from traveling up and down fuel and oxidizer feed lines.

Mathematical models were developed based upon previous

(Above photo) A Saturn V second stage rocket is lifted into place on the A-2 Test Stand at Stennis Space Center for Apollo Program testing in the 1960s.

(Top center photo) A Saturn V first stage is lifted into place on the B-1/B-2 Test Stand at Stennis Space Center for Apollo Program testing.

(Bottom center photo) A Saturn V second stage is test fired on the A-2 Test Stand at Stennis Space Center. Stennis tested all of the Saturn V stages that carried humans to the moon during the Apollo Program.

(Far right photo) Apollo 6 launches on the second all-up Saturn V test flight and the first flight of the rocket to carry crew members.

flights and verified through a series of tests, while static test firings of first stages for upcoming missions were tested with pogo suppression hardware installed. On July 15, 1968, Apollo Program Director Sam Phillips concurred with the group's solution.

However, the failure of the J-2 engines on the second and third stages presented more of a challenge. Early on, the team investigating the failure discovered a leak of liquid hydrogen gas at 70 seconds into the burning of the second stage in engine number 2. This leak in the bellows section of the Augmented Spark Ignitor (ASI) fuel line started as a small leak in a defect which eventually resulted in catastrophic failure. The investigation determined that unfortunately, the failure of engine two was compounded when, as combustion pressure began to fall, sensing equipment triggered the shutdown of a different engine, number three. The restart failure of the J-2 engine in the third stage was chalked up to the same defect in the ASI.

How was such a major problem missed by engineers during testing? It turns out that during ground testing, frost on the lines from cold propellant temperatures had added a degree of extra protection from vibrations in the bellows section. Because this same process does not occur in the vacuum of space, fatigue cracks emerged. Vacuum tests of eight ASI lines at Rocketdyne facilities resulted in the failure of all eight, each time in the same bellows section. The fix required the removal of the bellows sections from subsequent lines and additional vacuum testing on all upper second and third stage engine flexible lines.

In August 1968, tests were conducted at the Mississippi Test Facility, now the Stennis Space Center, on the first stage pogo suppression system and the second stage redesigned fuel lines for the J-2 engines. The success of the tests gave NASA confidence to continue plans for a crewed Apollo 8 mission that December. With this decision, the Moon landing came ever closer.

InSight mission launches on its way to Mars

A United Launch Alliance Atlas V rocket lifts off through a blanket of thick fog from Space Launch Complex 3 at Vandenberg Air Force Base, California, on May 5, carrying NASA's Interior Exploration using Seismic Investigations, Geodesy and Heat Transport, or InSight, Mars lander. Liftoff was at 6:05 a.m. CDT. The spacecraft will be the first mission to look deep beneath the Martian surface. It will study the planet's interior by measuring its heat output and listen for marsquakes. InSight will use the seismic waves generated by marsquakes to develop a map of the planet's deep interior. The resulting insight into Mars' formation will provide a better understanding of how other rocky planets, including Earth, were created.

NASA in the News

NASA demonstrates nuclear power system

NASA and the Department of Energy's National Nuclear Security Administration (NNSA) have successfully demonstrated a new nuclear reactor power system that could enable long-duration crewed missions to the Moon, Mars and destinations beyond. NASA announced the results of the demonstration, called the Kilopower Reactor Using Stirling Technology (KRUSTY) experiment on May 2. The experiment was conducted at the NNSA's Nevada National Security Site from November 2017 through March. The goal is to provide safe, efficient energy to help power future robotic and space exploration. Kilopower is a small, lightweight fission power system capable of providing up to 10 kilowatts of electrical power – enough to run several average households – continuously for at least 10 years. Four Kilopower units would provide enough power to establish an outpost. For more about the ongoing Kilopower project, visit: https://www.nasa.gov/directorates/spacetech/kilopower. For more on NASA's investments in space technology, visit: https://www.nasa.gov/spacetech.

NASA planet hunter launched into orbit

NASA's Transiting Exoplanet Survey Satellite (TESS) launched April 18 on the first-of-its-kind mission to find worlds beyond our solar system, including some that could support life. TESS is expected to usher in a new era of exoplanet research and find thousands of new exoplanets orbiting nearby stars. It lifted off on a SpaceX Falcon 9 rocket from Space Launch Complex 40 at Cape Canaveral Air Force Station in Florida. TESS will use four wide-field cameras to map 85 percent of the sky during a two-year mission. TESS will be watching for phenomena called transits. A transit occurs when a planet passes in front of its star from the observer's perspective, causing a periodic and regular dip in the star's brightness. More than 78 percent of the about 3,700 confirmed exoplanets have been found using transits. NASA's Kepler spacecraft has used the method to find more than 2,600 exoplanets between 300 and 3,000 light-years from Earth. TESS will focus on stars between 30 and 300 light-years away and 30 to 100 times brighter than Kepler's target. For more on TESS, go to: https://www.nasa.gov/tess.

Astronaut visits Stennis to report on ISS mission

(Top photo) Astronaut Joe Acaba speaks to Stennis Space Center employees during his visit to the site May 1. Acaba updated employees on his experiences during his recent six-month stay on the International Space Station (ISS) as a member of Expedition 53/54. Acaba was teaching middle school when he learned NASA was seeking teachers to serve as astronauts. He applied and was accepted into the 2004 class. He has flown on three space shuttle and ISS missions and logged 306 days in space. He has conducted three spacewalks, despite confessing he has a fear of heights. "If you look at the pictures, I'm holding on to the railing," he pointed out during his presentation. During his visit, Acaba met with NASA and contractor leaders and toured the B-2 Test Stand (right photo), where preparations are ongoing to test the core stage of NASA's new Space Launch System rocket.

Stennis observes Earth Day

Stennis Space Center employees lvisit exhibits featured during an onsite Earth Day expo April 19. Each year, the center hosts an expo to showcase environmentally focused information and presentations, and acquaint emnployees with eco-friendly merchandise. This year focused on products made from recycled and/or reclaimed materials. Earth Day was launched in the United States in 1970 and now is observed worldwide every April 22.

NASA hosts safety standdown

Stennis Space Center employees participate in a ladder safety presentation (above) during a NASA-sponsored safety standdown May 9. OSHA sponsored a voluntary national safety standdown May 7-11, encouraging employers to discuss construction fall protection with employees. In addition to fall protection and ladder safety, the Stennis event focused on heat stress awareness and ways to prevent slips, trips and falls. During the emphasis, Stennis Director Rick Gilbrech (below, l) and safety specialist Karen Patton (below, r) recognized four Healtheon contract workers for their contributions to safety with S.H.A.K.E.R.S. (Smart Human Actions Keep Everyone Really Safe) awards.

Stennis marks Holocaust Day

Standing in front of an image of herself as a child, Irene Miller speaks to Stennis Space Center employees during an onsite Holocaust Days of Remembrance program April 17. Miller recounted her experience as a Holocaust survivor in Poland prior to World War II. Her family fled the country in 1939, when Miller was 5 years old. They were smuggled into Russia and spent more than two years in Siberia, facing extreme hunger and conditions. Miller returned to Poland in 1946, spending several years in an orphanage before emigrating to Israel and, then, the United States. Every member of her extended family in Poland had been killed during the war. “My mission in life now is to use my Holocaust experience to promote tolerance and diversity, ...” Miller said. “Hate and prejudice does not have geographic boundaries.” Holocaust Days of Remembrance are observed annually, this year with a “Legacy of Perseverance” theme.

Stennis exhibits at Columbus air show

Young visitors enjoy NASA-sponsored exhibits during the Wings Over Columbus open house/ air and space show at Columbus Air Force Base on April 21. Representatives from the Stennis Office of Communications hosted a space-related exhibit featuring hands-on activities during the one-day event just outside Columbus, Miss. The effort was part of an ongoing focus to share the Stennis story and help educate individuals about NASA's new Space Launch System rocket, being built to carry humans to such deep-space destinations as the Moon and Mars.

Stennis holds annual Old Timers' Day

Former Stennis Space Center employees enjoyed a return to the site for Old Timers' Day activities May 24 The annual fellowship was attended by retirees, guests and employees. The gathering was sponsored by the Stennis Recreational Association, with contributions from several companies and organizations. Participants included: (top photo, l to r) Jim Shows, Dave Caldarelli, Donnie Walters, Virgil Smith, Pat Mooney and fomer Director Jerry Hlass; (middle left photo, l to r) former Directors Patrick Scheuermann and Jerry hlass; (middle right photo, l to r) Vaness Lee, Lillian Rogers and Pamela McCord; (bottom left photo, l to r) Frank Hobson Jr. and John Marshall; (bottom right photo, l to r) Pat Mooney, Stennis Deputy Director Randy Galloway and Robert Van Peski.

RiverTech safety commitment rooted in core values

Note: The following is part of a regular focus on safety and health at Stennis Space Center. It was submitted by RiverTech safety specialist Greg Garrett.

RiverTech, LLC, along with its parent company Akima, LLC, has a commitment to safety that is rooted in the following core values:

- Honesty and integrity govern our activities.
- Commitments made will be fulfilled.
- Everyone will be treated with dignity and respect.

When applied to occupational health, safety and the environment (HSE), this becomes a no-tolerance approach to ensuring the safety and well-being of employees, subcontractors, clients and the environment. Our approach is designed to ensure that every employee goes home safe and that we have whole families – with zero harm and zero injuries.

RiverTech is the protective services contractor for Stennis Space Center, charged with providing security and safety for the center and its most valuable assets, including the workforce. To that end, we provide some very unique and challenging services for the site:

- In our commitment to safety, RiverTech at Stennis is Star-certified in the Voluntary Protection Program (VPP) by OSHA. Our safety program follows the four main elements and 32 subelements of VPP. OSHA conducted an onsite evaluation in December 2017, and RiverTech was recommended for continued participation in VPP. To date, RiverTech is the only protective services contractor at a NASA center that has stand-alone VPP certification and only one of five sites nationwide in our code category that has obtained Star certification.

- RiverTech is charged with the protection of NASA property and personnel around the clock. Since we have personnel who work all hours of the day, weekends and holidays, they see conditions that might not be visible to the normal work force. RiverTech personnel are charged with submitting close call reports through the NASA link or notifying appropriate individuals of matters of urgency. RiverTech also works closely with Bastion Technology when asked for historical data pertaining to close call submissions at the center.

- As the protective services contractor, RiverTech personnel are required by NASA procedures to conduct inspections of vehicles and/or personnel on a routine/random basis. They periodically pull vehicles out of inbound and outbound traffic lines to conduct inspections for weapons and/or contraband. Any such items found are confiscated and held until a full investigation is conducted. A report of the incident is submitted to NASA and the NASA Inspector General's Office for possible further action. The individual who possessed the items is subject to disciplinary action and possible legal action by the center.

- RiverTech employees participate in a variety of center programs and committees. The company has representatives on the director's Safety Management Review group, various safety committees, the Emergency Council, the VPP Steering Committee, the VPP Working Group, the Certification Board and the Ergonomics and Industrial Hygiene Committee.

- RiverTech personnel receive specific law enforcement training through the NASA Protective Service Training Academy at Kennedy Space Center. The training received by personnel is law enforcement sensitive and cannot be discussed in detail for tactical reasons. Personnel must complete all phases of the training successfully and pass both written and practical application tests to graduate the course. Included in the academy training is response to active shooter incidents. RiverTech personnel are trained to respond to and stop the threat in these type of incidents. All of our personnel are CPR/AED/First Aid certified and will respond to emergencies as required.

An engaged safety culture keeps Stennis Space Center rocketing forward!

To contribute to this page, contact:

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1963 – Construction begins on NASA test site

Note: For more than 50 years, NASA's John C. Stennis Space Center has played a pivotal role in the success of the nation's space program. This month's Lagniappe provides a glimpse into the history of the south Mississippi rocket engine test center.

Fifty-five years ago, on May 17, 1963, the first tree was cleared to make room for the construction of what would become the John C. Stennis Space Center.

The selection of Hancock County for what became the Apollo and space shuttle rocket engine test site was a complex and heavily evaluated task. Many things had to be taken into consideration.

Nearby Michoud Assembly Facility in New Orleans was where the Saturn rockets were being built. Cape Canaveral, Florida was where the rockets were to be launched. There needed to be a facility accessible to both places where rocket engines and stages could be tested.

The facility also could not be in a heavily populated area due to the noise and vibrations the rockets would create when tested. NASA did need communities to support the facility, though. The site also needed to have access to water, highway and rail in order for supplies and the rocket stages themselves to be moved back and forth.

An ad hoc site committee was formed, and existing locations, as well as new sites, were considered. After filtering out locations that did not meet the initial criteria, a short list was formed, and Hancock County, Mississippi, was one of the sites included.

It was perfect, just 45 miles from New Orleans, accessible via river and highway, surrounded by communities that could support it and featuring a climate that permitted year-round testing. It was decided not long after the committee visited the area that Hancock County, Mississippi, was going to be where Apollo rocket stages were tested.

Building the then-Mississippi Test Facility (MTF) was not a simple matter. The banks of the Pearl River and the surrounding land was full of trees, grass, vines, mud, snakes and mosquitos. South Mississippi weather did not make the going any easier, with sweltering temperatures and very frequent storms drenching the work area. Machinery would get bogged down in the mud, slowing and sometimes stopping construction.

However, mixing old technology like mules and plows to clear land with new machinery and building materials got the job done. In 1966, just three years after the first tree was cut down, the first Saturn V rocket booster was tested at MTF.

Employees cut one of the first trees May 17, 1963, for construction of the then-Mississippi Test Facility in south Mississippi. NASA announced plans in October 1961 to build a rocket engine test site in Hancock County, Mississippi, launching one of the largest construction projects of that time. The site would conduct its first test in 1966 and go on to test the Saturn V rocket stages that carried humans to the Moon during the Apollo Program. It eventually grew into the federal city known as Stennis Space Center.

Office of Diversity and Equal Opportunity

May celebrates Asian Americans/Native Hawaiians/Pacific Islanders

The United States recognizes the month of May as a time to acknowledge the achievements and contributions to the American story by Asian Americans, Pacific Islanders and Native Hawaiians.

The annual emphasis celebrates the cultural traditions, ancestry, native languages and unique experiences represented among more than 56 ethnic groups (speaking over 100 languages) from Asia and the Pacific Islands who live in the United States.

The month of May was chosen to commemorate the immigration of the first Japanese to the United States on May 7, 1843. It was also chosen to mark the anniversary of the completion of the transcontinental railroad on May 10, 1869. The majority of the workers who laid the tracks were Chinese immigrants.

In this instance, tribute is paid to Florence Ebersole Smith Finch, the daughter of an American soldier and Filipino mother, who was working for the U.S. Army during World War II when the Japanese occupied the Philippines. Finch was a stenographer at the Army Intelligence headquarters in Manila under Maj. E. C. Engelhart.

While working there, she met Charles E. Smith, a Navy chief electrician's mate. They married in August 1941, a few months before the Japanese attack on Pearl Harbor. When the war began, Smith reported to his patrol torpedo (PT) boat duty. He died on Feb. 8, 1942, trying to resupply American and Filipino troops trapped on Corregidor Island and the Bataan Peninsula.

When Manila fell to the Japanese, Finch avoided being imprisoned with other enemy nationals at Santo Tomas Internment Camp in Manila by claiming Filipino citizenship. The Japanese gave Finch a job with the Japanese-controlled Philippine Liquid Fuel Distributing Union.

Soon, Finch was writing vouchers for gasoline, diesel fuel, oil and alcohol for the Philippine Underground. She also arranged for stocks of critical items to be destroyed when they were shipped. Englehart managed to get word to Finch that he had been captured and that he and fellow war prisoners were being maltreated. She helped smuggle food, medicine, soap and clothing to them in prison.

In October 1944, the Japanese discovered Finch's activities. She was taken to a nearby Japanese military station where she was questioned and tortured using electrical devices on all her fingers, but she never talked. The worst of her experience was in Bilibad prison where she was confined to a 2-foot-by-4-foot room and starved. She was tried and sentenced to three years of hard labor at the Philippine Women's Correctional Institution in Mandaluyong, on the outskirts of Manila.

After serving five months of her sentence, Finch was liberated by American forces. Returning to the United States aboard a U.S. Coast Guard transport, she headed for Buffalo, New York, her father's hometown. She then enlisted in the Coast Guard to "avenge the death of her late husband."

Seaman First Class Finch was the first U.S. Coast Guard Women's Reserve member to receive the Asian-Pacific Campaign ribbon in recognition of her service in the Philippines. At the end of the war, she was awarded the civilian U.S. Medal of Freedom. Of her wartime activities, Finch said: "I feel very humble because my activities in the war effort were trivial compared with those of people who gave their lives for their country."

In 1995, the U.S Coast Guard in Honolulu honored the war hero's service when it named its new $3.5 million headquarters on Sand Island, Hawaii, for Florence Ebersole Smith Finch.

Information in this article came from the Defense Equal Opportunity Management Institute at www.deomi.org.

Hail & Farewell

NASA bids farewell to the following:

Paul Farr	AST, Technical Management	Center Operations Directorate
Christel Francis	Program Analyst	Rocket Propulsion Test Program Office

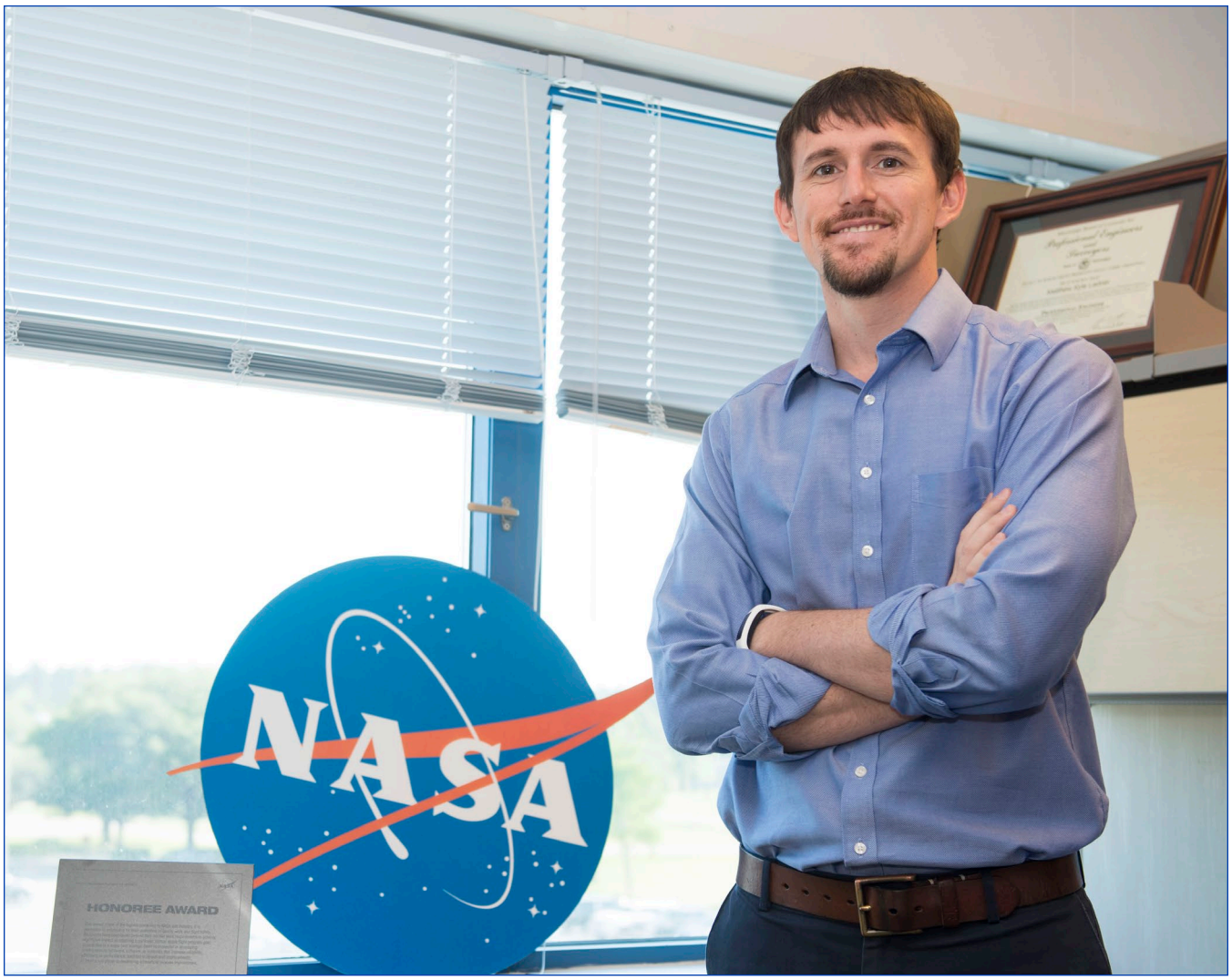
NASA welcomes the following:

Christopher Moore	Lead, Equal Employment Specialist	Office of Diversity and Equal Opportunity
Sheldon Murphy	Contract Specialist	Office of Procurement

Faces of Stennis

Each month, Lagniappe will feature employees at Stennis Space Center whose work enables the center to fulfill its mission as the nation's largest rocket engine test center. This month's employee is highlighted on the following page.

Matt Ladner



Matt Ladner remembers playing as a young boy on his grandfather's porch in northern Hancock County when he heard a deep rumble in the distance. He asked his grandfather if a thunderstorm was brewing, only to be told the noise was from a rocket engine test at nearby Stennis Space Center. The Necaise Crossing native and resident soon grew familiar with the sound and thought how incredible it would be to work at the site. As a Stennis facilities design and construction project manager, he now knows. Ask him the best thing about working at Stennis, and he responds – "Are you kidding me? I get to work for NASA right down the road from my house. What a blessing it is to have a job that supports a variety of activities that are 'out of this world!'" Ladner arrived as a contractor at Stennis in 2008, after earning his electrical engineering degree from Mississippi State University and learning from a friend about openings at the site. His current role includes work as the Stennis demolition program manager, as manager of several construction-of-facility projects and as lead electrical high-voltage engineer for the B-2 Test Stand restoration project. He is proud of the work he has been a part of, particularly in helping prepare the B-2 stand for testing the core stage of NASA's new Space Launch System rocket and in helping the Stennis demolition program lead in NASA's efforts to reduce its facility footprint to increase operational efficiency. Outside of NASA, Ladner enjoys spending time with his wife, Danielle, and their four (soon-to-be-five) children, serving his church, music (he plays multiple instruments), sports, fishing and reading. And of course, he never tires of not only hearing but now being able to view those rumbling rocket engine tests.